IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors:	Bin Zhang, et al.	Examiner: Chuks N. Onyezia
Serial No.:	10/672,953	Group Art Unit: 3691
Filed:	September 26, 2003	Docket No.: 200208037-1
Title:	Determination of a Bid Value Associated with a Selected Bidder	

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Appeal Brief is filed in response to the Final Office Action mailed May 29, 2009 and Notice of Appeal filed on August 29, 2009.

AUTHORIZATION TO DEBIT ACCOUNT

It is believed that no extensions of time or fees are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required (including fees for net addition of claims) are hereby authorized to be charged to Hewlett-Packard Development Company's deposit account no. 08-2025.

I. REAL PARTY IN INTEREST

The real party in interest is Hewlett-Packard Development Company, LP, a limited partnership established under the laws of the State of Texas and having a principal place of business at 20555 S.H. 249 Houston, TX 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware Corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holdings, LLC.

II. RELATED APPEALS AND INTERFERENCES

There are no known related appeals, judicial proceedings, or interferences known to appellant, the appellant's legal representative, or assignee that will directly affect or be directly affected by or have a bearing on the Appeal Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1 – 19 are pending in the application. Claims 3, 9, and 16 are objected to but would be allowed if written in independent form to include all the limitations of the base claim and any intervening claim. Claims 1, 2, 4-8, 10-15, and 17-19 are rejected. The rejection of claims 1, 2, 4-8, 10-15, and 17-19 is appealed.

IV. STATUS OF AMENDMENTS

No amendments were made after receipt of the Final Office Action. All amendments have been entered.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The following provides a concise explanation of the subject matter defined in each of the claims involved in the appeal, referring to the specification by page and line number and to the drawings by reference characters, as required by 37 C.F.R. § 41.37(c)(1)(v). Each element of the claims is identified by a corresponding reference to the specification and drawings where applicable. Note that the citation to passages in the specification and drawings for each claim element does not imply that the limitations from the specification and drawings should be read into the corresponding claim element or that these are the sole sources in the specification supporting the claim features.

<u>Claim 1</u>

A method, comprising:

obtaining historical auction data (Fig. 1, #102: obtain historical auction data that can include date of auction, description of auction items, bids from all bidders, bid winner, and amount paid: see p. 5, lines 2-5 of paragraph [0017]);

determining, with a computer from the historical auction data, a first parameter that is a function of both a joint bid distribution and a density function related to the joint bid distribution (Fig. 1, #104: an estimate $\psi_k(b)$ is obtained from the historical data: see p. 5, lines 5-6 of paragraph [0017]);

selecting, with the computer, a bidder (Fig. 1, #106: see p. 5, line 7 of paragraph [0017]);

obtaining, with the computer, a value distribution for the selected bidder (Fig. 1, #108: the bidder's probability value distribution F is obtained: see p. 5, lines 8-11 of paragraph [0017]); and

solving, with the computer, an equation that includes the first parameter and the selected bidder's value distribution, and not the value distribution of other bidders, to compute a bid value associated with the selected bidder for a given bid (Fig. 1, #110: an equation is solved that includes $\psi_k(b)$ and the selected bidder's probability value distribution: see p. 5, lines 1-3 of paragraph [0018] and p. 6, lines 1-4 of paragraph [0018]).

Claim 2

The method of claim 1 wherein solving the equation comprises solving an ordinary differential equation that comprises a probability value distribution associated with the selected bidder and the derivative of the probability value distribution (An ordinary differential equation (ODE) is solved for the bidder's value. This equation is shown as equation 2: see p. 3, lines 1-3 of paragraph [0011] and lines 1-3 of paragraph [0012]).

Claim 6

A system (Fig. 2, #200: p. 6, lines 1-2 of paragraph [0019]), comprising:

a processor (Fig. 2, #202: p. 6, line 3 of paragraph [0019]); and

memory containing software executable by said processor (Fig. 2, #204: p. 6, lines 4-6 of paragraph [0019]);

wherein, by executing said software, said processor computes a ratio of an estimate of a density function to an estimate of a joint bid distribution, permits a bidder to be selected, obtains a probability value distribution for the selected bidder, and solves an ordinary differential equation that includes the selected bidder's probability value distribution, and not the probability value distribution of other bidders, to compute a bid value associated with the selected bidder (p. 5, lines 1-11 of paragraph [0017]; p 5, line 1 of paragraph [0018] to p. 6, line 4 of paragraph [0018]).

Claim 8

The system of claim 6 wherein the processor solves the ordinary differential equation multiple times, each time for a different selected bidder and each time without using probability value distributions associated with other bidders (An ordinary differential equation (ODE) is solved for the bidder's value. This equation is shown as equation 2: see p. 3, lines 1-3 of paragraph [0011] and lines 1-3 of paragraph [0012]).

Claim 12

A system (example means is system #200 in Fig. 2), comprising:

means for determining a ratio of an estimate of a density function to an estimate of a joint bid distribution (example means is processor #202 of Fig. 2. An estimate $\psi_k(b)$ is obtained from the historical data: see p. 5, lines 5-6 of paragraph [0017]);

means for selecting a bidder (example means is processor #202 of Fig. 2. See p. 5, line 7 of paragraph [0017]);

means for obtaining a probability value distribution for the selected bidder (example means is processor #202 of Fig. 2. The bidder's probability value distribution F is obtained: see p. 5, lines 8-11 of paragraph [0017]); and

means for evaluating an ordinary differential equation that includes the selected bidder's probability value distribution, and not the probability value distribution of other bidders, to compute a bid value associated with the selected bidder (example means is auction AAP #220 in Fig. 2. The auction application 220 includes or calls a differential equation solver to solve the ODE: see p. 6, lines 7-9 of paragraph [0019]. An equation is solved that includes $\psi_k(b)$ and the selected bidder's probability value distribution: see p. 5, lines 1-3 of paragraph [0018] and p. 6, lines 1-4 of paragraph [0018]).

Claim 14

A computer readable storage medium storing instructions that when executed by a processor cause the processor to determine a bid value for a bidder of a action, said instructions comprising:

an instruction usable to obtain previously acquired auction information (Fig. 1, #102: obtain historical auction data that can include date of auction, description of auction items, bids from all bidders, bid winner, and amount paid: see p. 5, lines 2-5 of paragraph [0017]);

an instruction usable to determine, from the previously acquired auction information, a first parameter that is a function of both a joint bid distribution and a density function related to the joint bid distribution (Fig. 1, #104: an estimate $\psi_k(b)$ is obtained from the historical data: see p. 5, lines 5-6 of paragraph [0017]);

an instruction usable to determine a bidder (Fig. 1, #106: see p. 5, line 7 of paragraph [0017]);

an instruction usable to obtain a value distribution for the determined bidder (Fig. 1, #108: the bidder's probability value distribution F is obtained: see p. 5, lines 8-11 of paragraph [0017]); and

an instruction usable to solve an equation that includes the first parameter and the determined bidder's value distribution, and not the value distribution of other bidders, to compute a bid value associated with the determined bidder for a given bid (Fig. 1, #110: an equation is solved that includes $\psi_k(b)$ and the selected bidder's probability value distribution: see p. 5, lines 1-3 of paragraph [0018] and p. 6, lines 1-4 of paragraph [0018]).

Claim 15

The storage medium of claim 14 wherein the instruction usable to solve the equation comprises an instruction usable to solve an ordinary differential equation (An ordinary differential equation (ODE) is solved for the bidder's value. This equation is shown as equation 2: see p. 3, lines 1-3 of paragraph [0011] and lines 1-3 of paragraph [0012]).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-5 are rejected under 35 USC § 101 as being directed to non-statutory subject matter.

Claims 1-5 are rejected under 35 USC § 112, first paragraph, as being failing to comply with the written description.

Claims 1, 2, 4-8, 10-15, and 17-19 are rejected under 35 USC § 103(a) as being unpatentable over USPN 7,096,197 (Messmer) in view of USPN 6,061,662 (Makivic).

VII. ARGUMENT

The rejection of claims 1, 2, 4-8, 10-15, and 17-19 is improper, and Appellants respectfully request reversal of these rejections.

The claims do not stand or fall together. Instead, Appellants present separate arguments for various claims. Each of these arguments is separately argued below and presented with separate headings and sub-heading as required by 37 C.F.R. § 41.37(c)(1)(vii).

Claim Rejections: 35 USC § 101

Claims 1-5 are rejected under 35 USC § 101 as being directed to non-statutory subject matter. These rejections are traversed.

In order to qualify as being patentable under section 101, the claims must be (1) tied to a particular machine or apparatus, or (2) transforms a particular article into a different state or thing (machine-or-transformation test: see *In re Bilski*, __ F.3d __ ,88 U.S.P.Q.2d 1385 (2008)). Independent claim 1 meets at least the first part of this test (i.e., the claim is tied to a particular machine or apparatus).

Independent claim 1 recites four different elements that are performed by a computer. The use of the computer imposes meaningful limits on the scope of claim 1.

Regarding the machine implementation part of the test, the court in *Bilski* analyzed previous Supreme Court cases and state: "A claimed process involving a fundamental principle that uses a particular machine or apparatus would not pre-empt uses of the principle that do not also use the specified machine or apparatus in the manner claimed" (see *Bilski* at 11). For example, the Supreme Court in *Diehr* allowed claims that used a mathematical equation (i.e., Arrhenius equation) since the claims did not seek to preempt use of the fundamental principle of the equation. Instead, the claims only attempted to preempt use of an <u>application</u> of that fundamental principle and not the fundamental principle itself (see *Bilski* at 8).

Claim 1 is not attempting to preempt use of a fundamental principle of computing a bid value with a selected bidder for a given bid. Instead, the claim is attempting to preempt an application of this fundamental principle with use of a computer.

Claim Rejections: 35 USC § 112

Claims 1-5 are rejected under 35 USC § 112, first paragraph, as being failing to comply with the written description. The examiner argues that there is no support in the specification for performing the method of claims 1-5 with a computer. These rejections are traversed.

The purpose of the written description requirement of 35 U.S.C. § 112, first paragraph, is to ensure that the inventor had *possession*, as of the filing date of application relied upon, of the specific subject matter later claimed by him. *Application of Wertheim*, 541 F.2d 257, 262, 191 USPQ 90, 96 (CCPA 1976); *Application of Edwards*, 568 F.2d 1349, 1351, 196 USPQ 465, 467 (CCPA 1978). This possession requirement ensures that the applicant actually invented the later claimed subject matter at the time the patent application was filed.

With possession being the key to satisfying the written description requirements of 35 U.S.C. § 112, first paragraph, the test for establishing that adequate written description simply concerns showing evidence that such possession existed. As has been repeatedly stated by both the Court of Customs and Patent Appeals and the Federal Circuit:

> [A]ll that is required is that it [the applicant] *reasonably conveyed* to persons skilled in the art that, as of the filing date thereof, the inventor had *possession* of the subject matter later claimed by him. (See *Eiselstein*, 52 F.3d at 1039, 34 USPQ2d 1467, 1470 (emphasis added)).

In the present case, Appellants clearly had possession of the method of claims 1-5 being performed by a computer. Figure 1 in Appellants' specification shows a method for computing a bid value with a selected bidder for a given bid. This figure supports the claim elements of independent claim 1. "Figure 2 illustrates an exemplary embodiment of a system 200 that implements the techniques described herein" (see lines 1-2 of paragraph [0019] on p. 6). Appellants respectfully ask the BPAI to read paragraph [0019] which describes a computer (processor 202, memory 204, input device 206, output device 208, and network interface 210) that implements the method of independent claim 1.

Claim Rejections: 35 USC § 103(a)

Claims 1, 2, 4-8, 10-15, and 17-19 are rejected under 35 USC § 103(a) as being unpatentable over USPN 7,096,197 (Messmer) in view of USPN 6,061,662 (Makivic). Appellants respectfully traverse.

Principles of Law: Obviousness

The test for determining if a claim is rendered obvious by one or more references for purposes of a rejection under 35 U.S.C. § 103 is set forth in *KSR International Co. v. Teleflex Inc.*, 550 U.S.___, 82 USPQ2d 1385 (2007):

> Under §103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. Quoting *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966).

As set forth in MPEP 2143.03, to ascertain the differences between the prior art and the claims at issue, "[a]ll claim limitations must be considered" because "all words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385.

According to the Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in view of *KSR International Co. v. Teleflex Inc.*, Federal Register, Vol. 72, No. 195, 57526, 57529 (October 10, 2007), once the *Graham* factual inquiries are resolved, there must be a determination of whether the claimed invention would have been obvious to one of ordinary skill in the art based on any one of the following proper rationales:

(A) Combining prior art elements according to known methods to yield predictable results; (B) Simple substitution of one known element for another to obtain predictable results; (C) Use of known technique to improve similar devices (methods, or products) in the same way; (D) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results; (E) "Obvious to try"—choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; (F) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations would have been predictable to one of ordinary skill in the art; (G) Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention. *KSR International Co. v. Teleflex Inc.*, 550 U.S._, 82 USPQ2d 1385 (2007).

Furthermore, as set forth in *KSR International Co. v. Teleflex Inc.*, quoting from *In re Kahn*, 441 F.3d 977, 988 (CA Fed. 2006), "[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasonings with some rational underpinning to support the legal conclusion of obviousness."

Therefore, if the above-identified criteria and rationales are not met, then the cited reference(s) fails to render obvious the claimed invention and, thus, the claimed invention is distinguishable over the cited reference(s).

Differences Between Claims and Art

Claims 1, 2, 4-8, 10-15, and 17-19 recite one or more elements that are not taught or suggested in Messmer in view of Makivic. These missing elements show that the differences between the combined teachings in the art and the recitations in the claims are great. As such, the pending claims are not a predictable variation of the art to one of ordinary skill in the art. Examples are provided below with different claim groupings being separately argued.

Sub-Heading: Claims 1, 2, 4-8, 10-15, and 17-19

Independent claim 1 is selected for discussion.

As one example, claim 1 recites using historical auction data to determine "a first parameter that is a function of a joint bid distribution and a density function related to the joint bid distribution." Messmer in view of Makivic does not teach this element.

The Examiner admits that Messmer does not teach "determining, from the historical auction data, a first parameter that is a function of both a joint bid distribution and a density function related to the joint bid distribution" (see OA mailed 11/28/2008 at p. 4). Appellants agree with this admission. The Examiner, however attempts to cure this deficiency with Makivic. Appellants respectfully traverse.

Makivic teaches a Monte Carlo system and a method that prices financial instruments, such as derivative securities. Monte Carlo is a computation algorithm that relies on repeated random sampling to compute a result and is used to price derivative securities or online options.

Column 25, lines 21-25 in Makivic teaches that an option price is represented as a probability density which is calculated from historical data. Column 25, lines 4-15 teaches a simulation via stochastic statistical sampling of historical asset data for an option using the Monte Carlo method. These citations to Makivic fail to teach or suggest using historical auction data to determine a first parameter that is a function of both a joint bid distribution and a density function related to the joint bid distribution. Instead, **Makivic only teaches representing an option price as a probability density which is calculated from historical data**. This teaching is a very different technique than claim 1 which recites both a joint bid distribution and a density function related to the joint bid distribution.

In contrast to Messmer in view of Makivic, claim 1 recites specific limitations regarding how the historical auction data is used to compute a bid value for a selected bidder. Specifically, claim 1 recites using historical auction data to determine "a first parameter that is a function of a joint bid distribution and a density function related to the joint bid distribution." Messmer in view of Makivic never teaches that historical auction data is used in this manner. Again, Messmer merely mentions that the analysis takes in account past history of bidding.

The differences between the claims and the teachings in the art are great since the references fail to teach or suggest all of the claim elements. As such, the pending claims are not a predictable variation of the art to one of ordinary skill in the art.

For at least these reasons, claims 1, 2, 4-8, 10-15, and 17-19 are allowable over Messmer in view of Makivic.

As another example, claim 1 recites "solving an equation that includes the first parameter and the selected bidder's value distribution, and not the value distribution of other bidders, to compute a bid value associated with the selected bidder for a given bid." The previous element in claim 1 further recites that the first parameter is a function of a joint bid distribution and density function. Thus, by combining these two elements, claim 1 recites a specific method for solving the equation to compute a bid value associated with the selected bidder for a given bid. The equation includes a joint bid distribution, a density function, and the selected bidder's value distribution. Messmer in view of Makivic does not teach these three different elements in an equation for computing a bid value associated with a selected bidder.

The Examiner admits that Messmer does not teach "solving an equation that includes the first parameter and the selected bidder's value distribution, and not the value distribution of other bidders, to compute a bid value associated with the selected bidder for a given bid" (see OA mailed 11/28/2008 at p. 4). Appellants agree with this admission. The Examiner, however, attempts to cure this deficiency with Makivic. Appellants respectfully traverse.

Makivic teaches a Monte Carlo system and a method that prices financial instruments, such as derivative securities. Monte Carlo is a computation algorithm that relies on repeated random sampling to compute a result and is used to price derivative securities or online options.

Column 25, lines 21-25 in Makivic teaches that an option price is represented as a probability density which is calculated from historical data. Column 25, lines 4-15 teaches a simulation via stochastic statistical sampling of historical asset data for an option using the Monte Carlo method. These citations to Makivic fail to teach or suggest solving an equation that includes the first parameter and the selected bidder's value distribution, and not the value distribution of other bidders, to compute a bid value

associated with the selected bidder for a given bid. Makivic is using Monte Carlo algorithms to compute a very different computation that involves option prices, not bidders or bid values associated with a selected bidder for a given bid. Bidding this manner is not considered in Makivic's formulation for derivative securities.

The differences between the claims and the teachings in the art are great since the references fail to teach or suggest all of the claim elements. As such, the pending claims are **not** a predictable variation of the art to one of ordinary skill in the art.

For at least these reasons, claims 1, 2, 4-8, 10-15, and 17-19 are allowable over Messmer in view of Makivic.

Sub-Heading: Claims 2, 8, 15

As yet some further examples, dependent claims 2, 8, and 15 recite solving ordinary differential equations. The Examiner cites Makivic at column 10, lines 11-20. Appellants respectfully traverse.

Makivic at column 10, lines 11-20 teaches a Monte-Carlo evaluation of a stock price. The evaluation analyzes an evolution of the stock price using a stochastic differential equation. Use of this differential equation is very different than the recitations of claims 2, 8, 15. Nowhere does Makivic teach that an ordinary differential equation is solved to **compute a bid value or even the probability of winning**. Makivic uses differential equations for a very different purpose (i.e., to follow the evolution of the price of a stock).

For at least these reasons, claims 2, 8, and 15 are allowable over Messmer in view of Makivic.

CONCLUSION

In view of the above, Appellants respectfully request the Board of Appeals to reverse the Examiner's rejection of all pending claims.

Any inquiry regarding this Amendment and Response should be directed to Philip S. Lyren at Telephone No. 832-236-5529. In addition, all correspondence should continue to be directed to the following address:

Hewlett-Packard Company
Intellectual Property Administration
P.O. Box 272400
Fort Collins, Colorado 80527-2400

Respectfully submitted,

/Philip S. Lyren #40,709/

Philip S. Lyren
Reg. No. 40,709
Ph: 832-236-5529

VIII. Claims Appendix

1. A method, comprising:

obtaining historical auction data;

determining, with a computer from the historical auction data, a first parameter that is a function of both a joint bid distribution and a density function related to the joint bid distribution;

selecting, with the computer, a bidder;

obtaining, with the computer, a value distribution for the selected bidder; and

solving, with the computer, an equation that includes the first parameter and the selected bidder's value distribution, and not the value distribution of other bidders, to compute a bid value associated with the selected bidder for a given bid.

2. The method of claim 1 wherein solving the equation comprises solving an ordinary differential equation that comprises a probability value distribution associated with the selected bidder and the derivative of the probability value distribution.

3. The method of claim 1 wherein solving the equation comprises solving d $\log F_k(\psi_k(b))/db + 1/(\psi_k(b) - b) = \Psi(b)$ where $\Psi(b)$ comprises the first parameter, b is a bid, $\psi_k(b)$ is the selected bidder's value distribution, k is an index identifying the selected bidder, and $F_k(\psi_k(b))$ is the probability value distribution for the selected bidder, and wherein $\Psi(b)$ is a ratio of the joint bid distribution and to the density function and is solved to compute the bid value associated with the selected bidder for the given bid.

4. The method of claim 1 wherein determining a first parameter comprises computing a ratio of the density function to the joint bid distribution.

5. The method of claim 1 further comprising repeating the acts of selecting a bidder, obtaining a probability value distribution for the selected bidder and solving the equation for additional bidders.

6. A system, comprising:

 a processor; and

 memory containing software executable by said processor;

 wherein, by executing said software, said processor computes a ratio of an estimate of a density function to an estimate of a joint bid distribution, permits a bidder to be selected, obtains a probability value distribution for the selected bidder, and solves an ordinary differential equation that includes the selected bidder's probability value distribution, and not the probability value distribution of other bidders, to compute a bid value associated with the selected bidder.

7. The system of claim 6 wherein the ordinary differential equation comprises the ratio.

8. The system of claim 6 wherein the processor solves the ordinary differential equation multiple times, each time for a different selected bidder and each time without using probability value distributions associated with other bidders.

9. The system of claim 6 wherein the equation comprises:

d $\log F_k(\psi_k(b))/db + 1/(\psi_k(b) - b) = \Psi(b)$ where $\Psi(b)$ comprises the ratio, b is a bid, $\psi_k(b)$ is the selected bidder's value distribution, k is an index identifying the selected bidder, and $F_k(\psi_k(b))$ is the probability value distribution for the selected bidder, and wherein $\Psi(b)$ is the ratio of the joint bid distribution and to the density function and is solved to compute the bid value associated with the selected bidder for a given bid.

10. The system of claim 6 wherein computing the ratio comprises obtaining historical bid data.

11. The system of claim 6 wherein the processor determines a reserve price based on the computed bid value.

12. A system, comprising:

      means for determining a ratio of an estimate of a density function to an estimate of a joint bid distribution;

      means for selecting a bidder;

      means for obtaining a probability value distribution for the selected bidder; and

      means for evaluating an ordinary differential equation that includes the selected bidder's probability value distribution, and not the probability value distribution of other bidders, to compute a bid value associated with the selected bidder.

13. The system of claim 12 further including means for obtaining historical bid data to be used by the means for determining the ratio.

14. A computer readable storage medium storing instructions that when executed by a processor cause the processor to determine a bid value for a bidder of a action, said instructions comprising:

an instruction usable to obtain previously acquired auction information;

an instruction usable to determine, from the previously acquired auction information, a first parameter that is a function of both a joint bid distribution and a density function related to the joint bid distribution;

an instruction usable to determine a bidder;

an instruction usable to obtain a value distribution for the determined bidder; and

an instruction usable to solve an equation that includes the first parameter and the determined bidder's value distribution, and not the value distribution of other bidders, to compute a bid value associated with the determined bidder for a given bid.

15. The storage medium of claim 14 wherein the instruction usable to solve the equation comprises an instruction usable to solve an ordinary differential equation.

16. The storage medium of claim 15 wherein the instruction usable to solve the equation comprises an instruction usable to solve d $\log F_k(\psi_k(b))/db + 1/(\psi_k(b) - b) = \Psi(b)$ where $\Psi(b)$ comprises the first parameter, b is a bid, $\psi_k(b)$ is the selected bidder's value distribution, k is an index identifying the selected bidder, and $F_k(\psi_k(b))$ is the probability

value distribution for the selected bidder, and wherein $\Psi(b)$ is a ratio of the joint bid

distribution and to the density function and is solved to compute the bid value associated

with the selected bidder for the given bid.

17. The storage medium of claim 15 wherein the instruction usable to determine the first

parameter comprises an instruction usable to compute a ratio of an estimate of the density

function to an estimate of the joint bid distribution.

18. The method of claim 1 further comprising displaying the bid value associated with

the selected bidder for the given bid.

19. The system of claim 12 wherein the means for evaluating an ordinary differential

equation solves $d \log F_k(\psi_k(b))/db + 1/(\psi_k(b) - b) = \Psi(b)$ where $\Psi(b)$ comprises the first

parameter, b is a bid, $\psi_k(b)$ is the selected bidder's value distribution, k is an index

identifying the selected bidder, and $F_k(\psi_k(b))$ is the probability value distribution for the

selected bidder, and wherein $\Psi(b)$ is a ratio of the joint bid distribution and to the density

function and is solved to compute the bid value associated with the selected bidder for the

given bid.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

None.